**The Supersized Mind in Sport?**

A golfer stands alongside the ball, putter in hands, looks at the hole, and simulates a putt; a snooker player, similarly, simulates a shot; a rugby or football player, taking a penalty or free-kick, looks studiedly at ball and posts or goal, and gauges the wind, as he paces precisely, to and from the ball; a tennis player simulates a serve;a darts player rehearses his throw; and a goalkeeper facing a penalty-kick tells his bench to check his notebook and covertly signal where the taker is most likely to hit the ball.

These scenarios, with the exception of the last, are familiar enough. But how should we cast them in terms of cognition and the mind? The options, until fairly recently, confined the engine of cognition to the brain or – at most – the organism. Instruments or props, such as those in the preceding examples, were allowed to be causes of cognition, but not part of the stuff of cognition itself. Those who thought otherwise were tarred with the ‘causal-constitutive error’. However, developments and writings in the last decade or so have given credence to the notion that this ‘error’ is itself an error, grounded in an unwarranted privileging of brain or organism. Clark and Chalmers’ (Clark 2008, 222) Parity Principle, in contrast, states that “If, as we confront some task, a part of the world functions as a process which, *were it done in the head,* we would have no hesitation in recognising as part of the cognitive process, then that part of the world *is* part of the cognitive process.” If this principle is sound, then the goalkeeper’s notebook is part of the cognitive process, since we would have no hesitation in accepting ‘straight’ memorising of the penalty-taking habits of opposition players as part of the cognitive process. The equivalent applies to the ‘epistemic actions’ (Clark 2008, 222) of the golfer and others above; we would count purely private rehearsals and re-rehearsals as part of the cognitive process which has the successful shot as its aim. Epistemic action demands spread of *epistemic credit.*

The approach illustrated in, though not exhausted by, the Parity Principle is known as the Hypothesis of Extended Cognition (HEC), or simply EXTENDED. Here, cognition leaks out into body and world. It is challenged by those who think it goes too far, and by those who think it does not go far enough. The former adhere to the Hypothesis of Embedded Cognition (HEMC), which in turn divides into BRAINBOUND (Adams and Aizawa 2001) and ORGANISMBOUND (Rupert 2004). The latter champion the cognitive significance of cultural practices (Hutchins 2008), amongst which are included, naturally, sport and at least much play. I will return to the latter perspective, but will first consider HEMC. And I will shine the spotlight for now on ORGANISMBOUND, since critique of its grounds entails at least partial critique of BRAINBOUND.

The foremost proponent of ORGANISMBOUND is Rupert. His approach is staunchly organism-centred, but only contingently so. This is because his key criteria of cognition are persistingness and integration, criteria which he takes only the organism to satisfy. If something other than the organism could satisfy these criteria, they would then be candidate constituents of cognition. However, for Rupert, nothing else does satisfy these criteria. It is the threatened transitoriness and/or merely superficial integratedness of bio-external operations and storage (such as notebooks and simulations with putter, cues and darts) that disqualifies them as realisers of cognitive processes.

We should ask, however, if Rupert’s conditions of persistingness and integration are clear and reasonable. For at least two decades, through Dennett’s (1991) influence especially, we have been familiar with rejection of the Cartesian Theatre “where it all happens”; if Dennett is right, there is no Boss or Oval Officeor Central Meaner to where all input travels and from whence all output proceeds. There is, instead, nothing over and above a messy array of sub-personal components and operations, from which subjectivity, consciousness and cognition are spun. Clark (2008: 95), indeed, expresses a suspicion, albeit nothing stronger, that the inner vehicles of standardly accepted cognitive states and processes might turn out to be an unruly motley, lacking even a useful kind of family resemblance. Theinerasks, in similar spirit, how Rupert’s criteria of persistingness and integration would fare *internally* should the inner neural story turn out to be heavily modular. Some neural sub-systems might be actively but only occasionally implicated in the cognitive story: do the persistingness and integration conditions then disqualify those neurally realised conditions from the true engine of cognition, consigning them, like the putter, cue and notebook, to occasional sources of input to this true engine? And, again, if this neural story is correct, what exactly *is* the true engine of cognition which someone with Rupert’s approach is finally after? Does the genuine locus of cognition threaten to shrink, like metaphysical free will, to an extensionless point?

The reflections immediately above should problematise the test of pesistingness and integration. Clark (2011)asks us to imagine a newly discovered biological creature, ‘Metamorpho’, with a complex and environmentally exploitative life-cycle. As it grows, it loses a variety of structural elements, such as legs, grippers, wings, eyes and ears. This is, to Metamorpho, no bigger a calamity than it is for the golfer to put his clubs away. It is adapted so as to develop and lose these elements in response to shifting environmental fortune. Tree, metal, sap, plastic and stone, say, are all available as seedcore for the newly emerging bodily forms and structures, which then persist and decay according to need and use. How should we think of Metamorpho? We could deploy Rupert’s approach, by unearthing what meets his conditions of persistingness and integration, isolating what Clark (2011) calls “a kind of seldom-seen-in-the-world core trunk-being,”always there but unable to perceive or locomote. This might sometimes suit our explanatory purposes. However, as Clark goes on to argue, proper understanding of the nature of the active creature surely demands we treat each temporary incarnation as the current physical agent. There is, for each Metamorpho slice, a sufficient perceptible unity, despite the lack of long-term integration and persistingness. And this finds its equivalent in the case of human cognition, since it is similarly possible here that there be sufficient here-and-now cognitive unity without full and persisting cognitive integration. The goalkeeper makes only temporary use of the notebook, sure, and could, again, easily discard it; and the putter, cue, dart and tennis racket are parts of temporary, soft-assembled ensembles often used in shadow form prior to their uses for the real thing. However, absent the a priori privileging of brain, organism, persistingness or integration, they are robustly constitutive of the engine of cognition, and not mere inputs to the actual engine. Indeed, we might, when considered as cognitive beings, be surprisingly like Metamorpho, in that bits of the encountered and designed world are deeply incorporated into our cognitive routines, persisting or decaying according to need. A banal example noted by Clark is that of pen and paper. Using pen and paper for an arithmetical calculation is a very deeply incorporated cognitive routine; at such moments, the body becomes what Heidegger calls ‘transparent equipment’, since it is not itself an object of our attention whilst we use it. One “sees through” it to the task in hand. It is, whilst in use, continuous with us and our other cognitive apparatus, and simple application of the Parity Principle to the arithmetical case casts it as part of the cognitive process. It is, again, less than clear why its lack of persistingness or full-blown integration with the brain or organism should exclude it from the cognitive engine. And we can now say the same about our present-day, myriad techno-cognitive cocoons. For the minimally competent golfer, darts player or reader, the putter, dart or notebook is, similarly, equipment which is transparent in the service of cognitive ends, and it is similarly unclear why any of these should be excluded from the engine of cognition. Clark (2008, 243) notes that whilst Rupert wisely prefers the whole organism to Adams and Aizawa’s neural confinement of the cognitive, he therefore puts his foot on a slippery slope, since there seems no good reason to stop at the skin after one allows cognitive wholes to be made up of parts as heterogeneous as neural activity plus arm and hand motions.

A further and rich source of support for HEC, and accompanying cognitive rites of passage for putter, cue, and dart at the least, is offered by the apparent cognitive import of gesture. Goldin-Meadow (2003) asks whether gesture is confined to the expression of fully formed thoughts, or whether it might be part of the *process* of thinking. We can ask, similarly, whether we should see the simulations of the golfer, snooker or darts player as mere expressions of antecedent cognitive processes ‘in the head’, or as constitutive of cognition itself. Goldin-Meadow (136-49) notes the clues provided by the facts (among others) that gesturing increases with task difficulty, when choosing between options and when reasoning about a problem rather than merely describing it or a known solution. More robust evidence is yielded by an experiment in which she and colleagues (2001) asked two matched groups of children to memorise a list, then do some mathematical problem-solving before trying to recall the list. One group could freely gesture during the maths task, whilst the other was forbidden from doing so. The free-gesture group did significantly better on remembering the list of words. Goldin-Meadow suggests that the gesturing shifts or reduces aspects of the overall neural cognitive load, freeing up resources for the memory task. She adduces further evidence for her conclusion that the physical act of gesturing plays an active role in learning, reasoning and cognitive change by “adding nuances possible only through visual or motor formats.” (2003, 186) Sport is probably replete with such gesturing. Indeed, the golfer or darts player, say, might echo E.M Forster’s (Dennett 1991, 245)mischievousdemand, “How do I know what I think until I see what I say?” by asking how one knows how one is going to putt or throw until one sees what one’s body does in rehearsal. In each case there seems to be a recognisably cognitive process running in some agent that creates outputs (speech, simulation of putt or throw) that, recycled as inputs, jolly the cognitive process along. The simulated putt or throw participates in a cognitively potent self-stimulating loop (“cognitive turbo-drive”) whose activity is as much an *aspect* of thinking as its result. Therefore, paraphrasing Breivik (2007, 123), the situation seems, within certain phases of the cognitive process, to master *us.* And it bears emphasis that this is not to court any false dualism. We are in no zero-sum game, where HEC entails rejection of cognitively substantive conscious deliberative states. These latter, as Breivik (2007, 125-32) again notes, are most conspicuous in, though not confined to, less competent performers consciously trying to improve. Breivik is probably right that even experts routinely switch between absorption and vital deliberation.

Proponents of HEMC, BRAINBOUND or ORGANISMBOUND, think HEC goes too far. Hutchins (2008), as noted earlier, thinks it goes not far enough: it is too concessive in allowing a pivotal role for the brain, and gives insufficient cognitive salience to our slowly evolved and variously transmitted cultural practices, among which, naturally, is sport. If Hutchins is correct, the ‘enculturated supersized mind’ has no *need* to solve ‘hard problems’ of on-the-spot recruitment and assembly, since our predecessors have cumulatively done that for us. Proper recognition of this feature allows completion of the theoretical revolution, yielding a view of mind finally fully divested of brainbound thinking. Applied to the cultural practice of sport, the public simulations and rehearsals, for instance, and the self-stimulating cycles they generate, ought not to be yoked to the brain or organism, since simple exposure to the relevant, inherited sport cultures shows one what is most cognitively efficacious.

Since Supersizing the Mind, Clark (2011) has pleaded guilty to the charge of neglect of culture’s cognitive importance. He has argued, however, that redress not only can coexist with retention of a key cognitive role for the brain, but that it ought to do so. Transmitted cultural practices, such as sport, *set the scene* for various neurally-based processes of cognitive assembly, operating over very different time-scales. Deploying the old example, the cultural recipe of pen-and-paper based long multiplication sets the scene, supported by the cultural practice of schooling, which helps me learn the recipe. The contribution of the cultural backdrop to the problem-solving whole is profound. But that should not disguise the potency of the brain in enabling me to profit from that cultural provision. It may well be true that some of the cognitive load is borne by the skilled performances of others, entailing a social dimension to on-the-spot recruitment and assembly. Sports, with their vaunted evolutions and heritages, exemplify this luminously; for instance, the cognitive aetiology of the putt-simulation will usually be undetachable from the actor’s early and reinforced exposures to golf. But it is still individual biological brains, though working together in these cases, which are, in the here-and-now, the most active orchestrating elements in the process. It is they which adapt, select and alter their own internal routines to more fluently exploit the reliable presence of culturally delivered resources. There is no conflict between recognition of culture’s cognitive importance and the claim that the brain is the essential core element that allows all the dovetailing and assembly to take place. Both claims are true, but target differing timescales and processes of adaptation and change.

If this position, organism-centred but not organism-bound, is correct, then the brain is indifferent to how and where key operations are performed. Brain, body, world, culture and action are constituents in a wider framework that displays the neural contribution as itself a manifestation of a larger imperative to reduce informational surprise. If, for instance, that tricky putt is sunk, there is indifference over the roles of, say, private rehearsal (with accompanying indifference over which parts of the brain are used), culturally reinforced simulation, and virtual rehearsal with a techno device one trails around the course. So don’t believe the myth that sportsmen and women are small-minded. Their minds are, like the those of the rest of us, supersized.

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